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TITLE: WATER BREAKING DEVICE OF ROLLING MILL
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ABSTRACT:

PURPOSE: To prevent the coolant water sneaked in the outlet side of upper/lower work rolls from adhering to a plate stock.

CONSTITUTION: A partition wall 12 is placed in corresponding to a roll gap opening part GO at the outlet side of upper/lower work rolls 3, 4. The partition wall 12 is structured so that plural flow guide plates 10 are placed in the pass line direction L and are slanted toward outside. A coolant water 5 passed through the roll gap opening part GO is distributed to inside/outside with the partition wall 12, discharging the outside coolant water 5 as is. The inside coolant water 5 is diverted to the partition wall 12 side by the air from an air spray nozzle 17, to be discharged along the flow guide plate 10.

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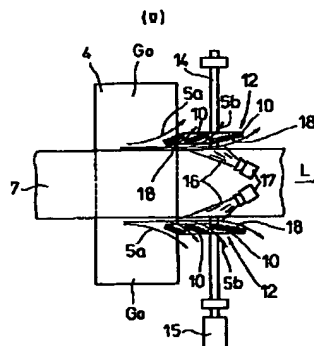
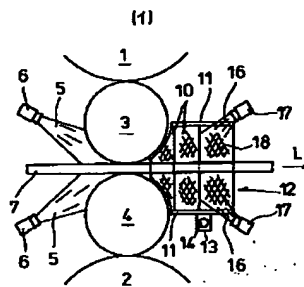
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(54) 【発明の名称】 圧延機の水切り装置

(57) 【要約】

【目的】 上下ワークロールの出側に回り込んだクーラント水の板材への付着を防止する。

【構成】 上下ワークロール3、4の出側に、ロールギャップ開放部G0に対応させて仕切り壁12を配置する。仕切り壁12は複数の導流板10をバスラインL方向へ配列し、且つ外側へ向けて傾斜させた構成とする。ロールギャップ開放部G0を通過してきたクーラント水5を仕切り壁12で内外側に振り分け、外側のクーラント水5をそのまま排除する。内側のクーラント水5を、エア噴射ノズル17からのエア16で仕切り壁12側へ変向させ、導流板10に沿わせて排出させる。



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【特許請求の範囲】

【請求項1】 上下ワークロールに入側よりクーラント水を噴射供給するようにしてある圧延機における上記上下ワークロールの出側の板幅方向両側位置に、複数の導流板をバスライン方向の上流側から下流側へ向けて斜め外方へ傾斜させて配列してなる仕切り壁を、上下ワークロールのロールギャップ開放部に対応するように板幅方向へ位置調整可能に対峙させ、且つ該仕切り壁の内側へ進入してきたクーラント水を仕切り壁側へ変向させるためのエアを噴き付けるエア噴射ノズルを、上記上下ワークロールの出側に変位可能に設置した構成を有することを特徴とする圧延機の水切り装置。

【請求項2】 仕切り壁の各導流板の内側面に、クーラント水の衝突力を吸収するための跳ね返り防止部材を張り付けた請求項1記載の圧延機の水切り装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は圧延機のロールに噴射供給されてロールギャップ開放部から圧延機出側へ通過してくるクーラント水を除去するための水切り装置に関するものである。

【0002】

【従来の技術】たとえば、アルミニウム製の板材を圧延する圧延機においては、図2の(イ)(ロ)に示す如く、上下のバックアップロール1、2でバックアップされた上下のワークロール3、4の入側で、クーラント水(水をベースとした圧延油)5をノズル6により上下のワークロール3、4の圧延部及び表面部に噴射供給して、圧延部の潤滑、及びロールを冷却するようにしている。7は板材、8はハウジングを示す。

【0003】しかしながら、上記ノズル6から噴射されたクーラント水は、板材7のない上下ワークロール3、4間のロールギャップ開放部G0から上下ワークロール3、4の出側に回り込んで板材7の幅端部に付着したり、更には、ハウジング8に当たった後に跳ね返って板材7上に付着する問題がある。

【0004】そのため、図2の(ロ)において、二点鎖線で示す如く、上下ワークロール3、4の出側に、吸引ダクト9を、板幅方向へ移動可能として板材7の幅端部に吸引口9aが近接するように配置し、ロールギャップ開放部G0を通過してきたクーラント水5を吸引ダクト9で吸引させるようにした方式の水切り装置が採用されている。

【0005】

【発明が解決しようとする課題】ところが、上記水切り装置では、吸引ダクト9の吸引力を相当強めないと、ロールギャップ開放部G0を直接通過してくるクーラント水5を吸引しきれものではなく、やはり板材7の幅端部へのクーラント水5の付着は防止できないのが実情である。

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【0006】上記アルミニウム製の板材7を圧延する圧延機の場合、板材7の表面に水分が付着していると、ウォーターステンと呼ばれる白錆等の原因となるため、水切り効果の高い水切り装置が要望されている。

【0007】そこで、本発明は、ロールギャップ開放部から出側へ通過したクーラント水を効果的に排除して板材への付着を防止することができるような圧延機の水切り装置を提供しようとするものである。

【0008】

【課題を解決するための手段】本発明は、上記課題を解決するために、上下ワークロールに入側よりクーラント水を噴射供給するようにしてある圧延機における上記上下ワークロールの出側の板幅方向両側位置に、複数の導流板をバスライン方向の上流側から下流側へ向けて斜め外方へ傾斜させて配列してなる仕切り壁を、上下ワークロールのロールギャップ開放部に対応するように板幅方向へ位置調整可能に対峙させ、且つ該仕切り壁の内側へ進入してきたクーラント水を仕切り壁側へ変向させるためのエアを噴き付けるエア噴射ノズルを、上記上下ワークロールの出側に変位可能に設置した構成とする。

【0009】又、仕切り壁の各導流板の内側面に、クーラント水の衝突力を吸収するための跳ね返り防止部材を張り付けた構成とするといふ。

【0010】

【作用】ロールギャップ開放部を通過してきたクーラント水は仕切り壁の存在により仕切り壁の内外側に振り分けられ、外側に導かれたクーラント水はそのまま排除されることになる。一方、内側に導かれたクーラント水は、エア噴射ノズルからのエアにより仕切り壁側に変向させられて、各導流板の傾斜に沿って排出されることになる。

【0011】又、導流板の内側面に跳ね返り防止部材を張り付けておくと、クーラント水が衝突しても、その衝突力が吸収されることにより板材側への跳ね返りが防止されることになる。

【0012】

【実施例】以下、本発明の実施例を図面を参照して説明する。

【0013】図1の(イ)(ロ)は本発明の一実施例を示すもので、図2の(イ)(ロ)に示したと同様に、上下のバックアップロール1、2に支持される上下のワークロール3、4の表面に、上下ワークロール3、4の入側からノズル6によってクーラント水5が噴射供給されるようにしてある圧延機において、上下ワークロール3、4の出側に、バスラインL方向の下流外側へ向けて傾斜するよう適宜間隔にてルーバー状に配置した複数の導流板10と、該各導流板10の上端間及び下端間を連結する連結部材11とからなる仕切り壁12を、板材7の両幅端部に対応させるようにバスラインLを挟んで板幅方向に対峙させ、且つ該両仕切り壁12の下部に固定

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ブロック13を設けると共に、該両固定ブロック13間に、一端をモータ15に連結した逆ねじスクリュウ14を貫通螺合し、上記モータ15の駆動で逆ねじスクリュウ14を回転させることで両仕切り壁12を板幅方向へ近接、離反させられるようにし、両仕切り壁12を板材7の幅端に近接配置することにより、ロールギャップ開放部G0を通過してきたクーラント水5を仕切り壁12で内外側に振り分けて外側のクーラント水5を直接排除させられるようにする。

【0014】又、上記上下ワークロール3、4の出側の上下位置に、仕切り壁12の内側へ導かれたクーラント水5にエア16を噴射して仕切り壁12側へ変向させるためのエア噴射ノズル17を、板材7の幅寸法に対応させられるように変位可能に設け、該各エア噴射ノズル17から噴射したエア16により、上記仕切り壁12の内側に進入してきたクーラント水5を仕切り壁12側へ変向させて、導流板10の傾斜に沿わせて導流板10の間から外側へ排出させられるようにする。

【0015】更に、上記エア噴射ノズル17のエア16により変向させたクーラント水5の仕切り壁12への衝突による跳ね返りを防止するため、仕切り壁12の各導流板10の内側面に、跳ね返り防止部材として金網18を張り付け、クーラント水5の衝突力を金網18によって吸収させられるようにする。

【0016】圧延機の運転を行うに際し、予め、モータ15の駆動で逆ねじスクリュウ14を回転させ、仕切り壁12の位置を、圧延される板材7の幅端面に近接設定する。

【0017】かかる状態において、圧延機の運転が行われることに伴って、ノズル6からワークロール3、4へ向けてクーラント水5が噴射供給されると、ワークロール3、4の出側に仕切り壁12が配してあるため、ロールギャップ開放部G0を通過したクーラント水5は上記仕切り壁12の外側（反板材側）と内側（板材側）とに振り分けられ、仕切り壁12の外側に導かれたクーラント水5は、矢印5aに示し、そのまま排除されることになる。

【0018】一方、上記仕切り壁12の内側に導かれたクーラント水5はそのまま進むと板材7の幅端部に付着してしまうので、ワークロール3、4の出側に配置したエア噴射ノズル17より板材7の幅端部へ向けて斜めにエア16を噴き付けて、上記仕切り壁12の内側に進入してきたクーラント水5を外側へ変向させるようにする。この際、上記仕切り壁12を構成する各導流板10はパスラインL方向の下流へ向けて外側に傾斜配置してあるため、エア噴射ノズル17のエア16によって変向させられた上記クーラント水5は、矢印5bに示す如く、各導流板10の傾斜に沿って導流板10の間から外側へ排出されることになる。

【0019】又、上記仕切り壁12の内側を通るクーラ

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ント水5がエア16の噴き付けにより外側へ変向されて導流板10に沿わされるとき、導流板10に衝突してその一部が板材7側へ跳ね返ってくる虞があるが、本発明では、各導流板10の内側面に跳ね返り防止部材として金網18が張り付けてあるので、たとえ、クーラント水5が導流板10の内側面に衝突したとしても、その衝突力が金網18によって吸収されるため、板材7上へ跳ね返って付着してしまうようなことはない。なお、金網18によって吸収されたクーラント水5は下方へ落下することになる。又、仕切り壁12の外側へ導かれたクーラント水5がハウジングや軸箱内面に衝突し跳ね返って板材7側に飛散しても、導流板10間にわずかなラップ（重なり）を与えることにより、仕切り壁12を越えて板材7に付着することはない。

【0020】このように、本発明においては、ロールギャップ開放部G0を通過してきたクーラント水5を仕切り壁12より内外側に振り分け、外側のクーラント水5を仕切り壁12により直接排除し、内側のクーラント水5をエア噴射ノズル17からのエア16により仕切り壁12の導流板10の傾斜に沿わせて排出させるようにしたので、従来のエア吸引ダクトを用いる場合に比して板材7の幅端部近傍でのクーラント水5の処理量を減少させることができ、水切り効果を増大させることができる。因に、上記仕切り壁12の位置設定は、板材7の幅端面に近い方が仕切り壁12の内側へのクーラント水5の進入量を少なくできて有利であるが、板材7が何らかの理由で蛇行した場合を考慮して、板材7と当接しない間隔で位置設定するようにしてある。

【0021】なお、上記実施例では、仕切り壁12を構成する導流板10の内側面に、クーラント水5の跳ね返り防止部材として金網18を張り付けた場合を例示したが、金網18に限らず、フェルトやスポンジ等を用いるようにしてもよいこと、その他本発明の要旨を逸脱しない範囲内で種々変更を加え得ることは勿論である。

【0022】

【発明の効果】以上述べた如く、本発明の圧延機の水切り装置によれば、複数の導流板を傾斜配列してなる仕切り壁を、上下ワークロールの出側にロールギャップ開放部に対応させて配置し、ロールギャップ開放部を通過してきたクーラント水を、仕切り壁を境界に内外側に振り分けられるようにして、外側に導いたクーラント水を直接排除し、且つ内側に導いたクーラント水を、エア噴射ノズルから噴射されるエアによって仕切り壁側へ変向させ各導流板の傾斜に沿わせて排出させることができるようにしたので、高い水切り効果が得られて板材へのクーラント水の付着を効果的に防止することができ、又、上記仕切り壁を構成する各導流板の内側面に跳ね返り防止部材を張り付けることにより、導流板からのクーラント水の跳ね返りを確実に抑えることができ、板材へのクーラント水の付着防止効果をより一層高めることができ

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る、という優れた効果を発揮する。

【図面の簡単な説明】

【図1】本発明の圧延機の水切り装置の一実施例の概要を示すもので、(イ)は切断側面図、(ロ)は(イ)の中央平面図である。

【図2】圧延機の一例を示すもので、(イ)は概略正面図、(ロ)は概略側面図である。

【符号の説明】

3 上ワークロール

4 下ワークロール

5 クーラント水

10 導流板

12 仕切り壁

16 エア

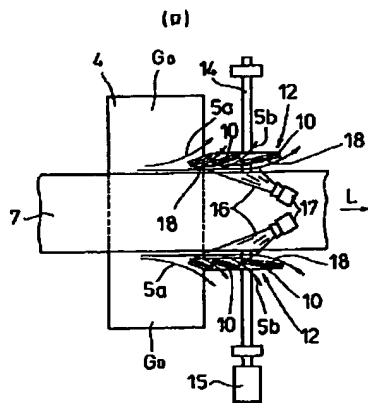
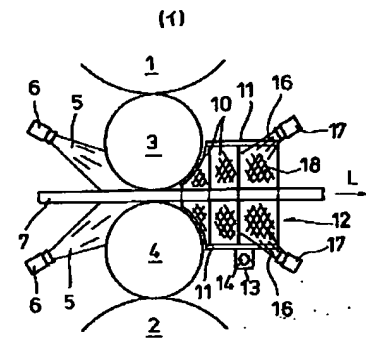
17 エア噴射ノズル

18 金網（跳ね返り防止部材）

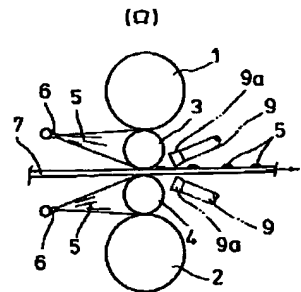
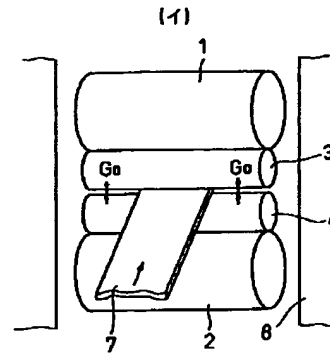
L パスライン

G0 ロールギャップ開放部

【図1】



【図2】



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CLAIMS

[Claim(s)]

[Claim 1] Coolant water from a close side to a vertical work roll in the direction both-sides position of the board width by the side of the appearance of the above-mentioned vertical work roll in the rolling mill which has been made to carry out injection supply The bridgewall which turns two or more baffle plates to a downstream from the upstream of the direction of a pass line, make incline toward the method of the outside of slanting, and it comes to arrange It is made to confront each other possible justification] in the direction of the board width so that it may correspond to the roll-gap opening section of a vertical work roll. And ridge equipment of the rolling mill characterized by having the composition which installed the air injection nozzle which sends out the air for carrying out turning of the coolant water which has advanced to the inside of this bridgewall to a bridgewall side possible [displacement] in the appearance side of the above-mentioned vertical work roll.

[Claim 2] Ridge equipment of the rolling mill according to claim 1 which stuck the rebound prevention member for absorbing the collision force of coolant water on the inside side of each baffle plate of a bridgewall.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the ridge equipment for removing the coolant water which injection supply is carried out at the roll of a rolling mill, and is passed from the roll-gap opening section to a rolling mill appearance side.

[0002]

[Description of the Prior Art] for example, the rolling mill which rolls out the plate made from aluminum -- setting -- (**) of drawing 2 -- injection supply of the coolant water (rolling oil which made water based) 5 is carried out by the nozzle 6 at the up-and-down rolling section and the up-and-down surface section of work rolls 3 and 4, and it is made to cool the lubrication of the rolling section, and a roll by the close side of the work rolls 3 and 4 of the upper and lower sides backed up by the up-and-down back up rolls 1 and 2, as shown in (**) 7 shows a plate and 8 shows housing.

[0003] However, the coolant water injected from the above-mentioned nozzle 6 is the vertical work roll 3 without a plate 7, and the roll-gap opening section GO between four. There is a problem which rebounds after turning to the appearance side of the shell vertical work rolls 3 and 4, adhering to the width-of-face edge of a plate 7 or hitting housing 8 further, and adheres on a plate 7.

[0004] Therefore, in the (b) of drawing 2, as a two-dot chain line shows, the suction duct 9 is arranged to the appearance side of the vertical work rolls 3 and 4, so that suction mouth 9a may approach at the width-of-face edge of a plate 7 as movement in the direction of the board width being possible, and it is the roll-gap opening section GO. The ridge equipment of a method it was made to make attract the passed coolant water 5 by the suction duct 9 is adopted.

[0005]

[Problem(s) to be Solved by the Invention] However, with the above-mentioned ridge equipment, it is the roll-gap opening section GO about the suction force of the suction duct 9 that it is fairly strong and there is nothing. The coolant water 5 passed directly cannot be attracted and the actual condition cannot prevent adhesion of the coolant water 5 to the width-of-face edge of a plate 7 too.

[0006] If moisture has adhered to the front face of a plate 7 in the case of the rolling mill which rolls out the plate 7 made from the above-mentioned aluminum, since it will become causes, such as a white rust called water stainless steel, the high ridge equipment of the ridge effect is demanded.

[0007] Then, this invention tends to offer the ridge equipment of the rolling mill which eliminates effectively the coolant water passed from the roll-gap opening section to the appearance side, and can prevent adhesion in a plate.

[0008]

[Means for Solving the Problem] In order that this invention may solve the above-mentioned technical problem, coolant water from a close side to a vertical work roll in the direction both-sides position of the board width by the side of the appearance of the above-mentioned vertical work roll in the rolling mill which has been made to carry out injection supply The bridgewall which turns two or more baffle plates to a downstream from the upstream of the direction of a pass line, make incline toward the method of the outside of slanting, and it comes to arrange It is made to confront each other possible [justification] in the direction of the board width so that it may correspond to the roll-gap opening section of a vertical work roll. And the air injection nozzle which sends out the air for carrying out turning of the coolant water which has advanced to the inside of this bridgewall to a bridgewall side is considered as the composition installed in the appearance side of the above-mentioned vertical work roll possible displacement].

[0009] Moreover, it is good to consider as the composition which stuck the rebound-phenomenon prevention member for absorbing the collision force of coolant water on the medial surface of each baffle plate of a bridgewall.

[0010]

[Function] Existence of a bridgewall can distribute the coolant water which has passed the roll-gap opening section to the inside-and-outside side of a bridgewall, and the coolant water led outside will be eliminated as it is. On the other hand, the air from an air injection nozzle will carry out turning of the coolant water led inside to a bridgewall side, and it will be discharged along with the inclination of each baffle plate.

[0011] Moreover, if it rebounds upon the medial surface of a baffle plate and the prevention member is stuck, even if coolant water collides, the rebound phenomenon by the side of a plate will be prevented by absorbing the collision force.

[0012]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0013] Similarly with the (b) (b) of drawing 1 showing one example of this invention, and having shown it to the (b) (b) of drawing 2 In the rolling mill with which injection supply has been made to be carried out in coolant water 5 by the nozzle 6 on the front face of the work rolls 3 and 4 of the upper and lower sides supported by the up-and-down back up rolls 1 and 2 from the close side of the vertical work rolls 3 and 4 Two or more baffle plates 10 suitably arranged in the shape of a louver at the interval so that it may incline towards the down-stream outside of the direction of pass-line L in the appearance side of the vertical work rolls 3 and 4, the connection which connects between the upper limits of each of this baffle plate 10, and between soffits -- the bridgewall 12 which consists of a member 11 While making it confront each other in the direction of the board width on both sides of a pass line L so that both the width-of-face edge of a plate 7 may be made to correspond and forming a fixed block 13 in the lower part of both these bridgewalls 12 Penetration screwing of the reverse flighted screw 14 which connected the end with the motor 15 among both these fixed blocks 13 is carried out. By approaching in the direction of the board width, making it made to desert both the bridgewalls 12 to it by rotating a reverse flighted screw 14 by the drive of the above-mentioned motor 15, and carrying out contiguity arrangement of both the bridgewalls 12 at **** of a plate 7 Roll-gap opening section GO A bridgewall 12 distributes the passed coolant water 5 to an inside-and-outside side, and it is made to be made to eliminate outside coolant water 5 directly.

[0014] Moreover, the air injection nozzle 17 for injecting air 16 in the coolant water 5 led to the vertical position by the side of the appearance of the above-mentioned vertical work rolls 3 and 4 in the inside of a bridgewall 12, and carrying out turning to it to a bridgewall 12 side By the air 16 which prepared possible [displacement] so that it might be made to correspond by the width-of-face size of a plate 7, and was injected from each of this air injection nozzle 17 Carry out turning of the coolant water 5 which has advanced inside the above-mentioned bridgewall 12 to a bridgewall 12 side, you make the inclination of a baffle plate 10 meet, and it is made to be made to discharge outside from between baffle plates 10.

[0015] Furthermore, in order to prevent the rebound phenomenon by the collision to the bridgewall 12 of the coolant water 5 which carried out turning by the air 16 of the above-mentioned air injection nozzle 17, you stick a wire gauze 18 on the medial surface of each baffle plate 10 of a bridgewall 12 as a rebound-phenomenon prevention member, and it is made to be made to absorb the collision force of coolant water 5 at a wire gauze 18.

[0016] It faces [operating a rolling mill and], and beforehand, a reverse flighted screw 14 is rotated by the drive of a motor 15, and a contiguity setup of the position of a bridgewall 12 is carried out at the width-of-face end face of the plate 7 rolled out.

[0017] If injection supply of the coolant water 5 is carried out towards work rolls 3 and 4 in connection with operation of a rolling mill being performed in this state from a nozzle 6, since the bridgewall 12 is arranged on the appearance side of work rolls 3 and 4, Roll-gap opening section GO The passed coolant water 5 can be distributed an outside (anti-plate side) and inside (plate side) the above-mentioned bridgewall 12, will show the coolant water 5 led to the outside of a bridgewall 12 to arrow 5a, and will be eliminated as it is.

[0018] It is made to carry out turning of the coolant water 5 which sent out air 16 from the air injection nozzle 17 arranged to the appearance side of work rolls 3 and 4 since it adhered to the width-of-face edge of a plate 7 when the coolant water 5 led inside the above-mentioned bridgewall 12 on the other hand advanced as it is aslant towards the width-of-face edge of a plate 7, and has advanced inside the above-mentioned bridgewall 12 outside. Under the present circumstances, since inclination arrangement of each baffle plate 10 which constitutes the above-mentioned bridgewall 12 has been carried out outside towards the lower stream of a river of the direction of pass-line L, the above-mentioned coolant water 5 in which the air 16 of the air injection nozzle 17-carried out turning will be discharged outside from between baffle plates 10 along with the inclination of each baffle plate 10, as shown in arrow 5b.

[0019] Moreover, although there is a possibility that it may collide with a baffle plate 10 and the part may rebound to a plate 7 side when turning of the coolant water 5 which passes along the inside of the above-mentioned bridgewall 12 is carried out outside that air 16 spouts and it is made to meet by the baffle plate 10 Since it rebounds upon the medial surface of each baffle plate 10 and the wire gauze 18 is stuck as a prevention member in this invention It seems that it rebounds and does not adhere to up to a plate 7 since the collision force will be absorbed at a wire gauze 18 even if coolant water 5 collides with the medial surface of a baffle plate 10. In addition, the coolant water 5 absorbed at the wire gauze 18 will fall below. Moreover, even if the coolant water 5 led to the outside of a bridgewall 12 collides and rebounds upon housing or an axle box inside and it disperses in a plate 7 side, it does not adhere to a plate 7 over a bridgewall 12 by giving few laps (lap) between baffle plates 10.

[0020] Thus, it sets to this invention and is the roll-gap opening section GO. The passed coolant water 5 is distributed to an inside-and-outside side from a bridgewall 12. Since eliminate outside coolant water 5 directly with a bridgewall 12, inside coolant water 5 is made to meet the inclination of the baffle plate 10 of a bridgewall 12 by the air 16 from the air injection nozzle 17 and it was made to make it discharge As compared with the case where the conventional air suction duct is used, the throughput of the coolant water 5 near the width-of-face edge of a plate 7 can be decreased, and the ridge effect can be increased. Incidentally, the direction near the width-of-face end face of a plate 7 can lessen the amount of penetration of the coolant water 5 inside a bridgewall 12, and although positioning of the above-mentioned bridgewall 12 is advantageous, it is positioned at the interval which does not contact a plate 7 in consideration of the case where a plate 7 moves in a zigzag direction by a certain reason.

[0021] In addition, although the case where a wire gauze 18 was stuck on the medial surface of the baffle plate 10 which constitutes a bridgewall 12 as a rebound-phenomenon prevention member of coolant water 5 was illustrated in the above-mentioned example, of course, change can be variously added within limits which do not deviate from the summary of that you may make it use not only the wire gauze 18 but the felt, sponge, etc., and other this inventions.

[0022]

[Effect of the Invention] As stated above, according to the ridge equipment of the rolling mill of this invention, the bridgewall which comes to carry out the inclination array of two or more baffle plates Make the roll-gap opening section correspond to the appearance side of a vertical work roll, arrange, and it enables it to distribute the coolant water which has passed the roll-gap opening section to an inside-and-outside side bordering on a bridgewall. Since carry out turning of the coolant water which eliminated directly the coolant water led outside, and was led inside to a bridgewall side, it is made to meet the inclination of each baffle plate and it enabled it to make it discharge by the air injected from an air injection nozzle By rebounding upon the medial surface of each baffle plate which the high ridge effect is acquired, and can prevent adhesion of the coolant water to a plate effectively, and constitutes the above-mentioned bridgewall, and sticking a prevention member The rebound phenomenon of the coolant water from a baffle plate can be stopped certainly, and the outstanding effect that the antisticking effect of the coolant water to a plate can be heightened further is demonstrated.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] this invention relates to the ridge equipment for removing the coolant water which injection supply is carried out at the roll of a rolling mill, and is passed from the roll-gap opening section to a rolling mill appearance side.

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PRIOR ART

[Description of the Prior Art] for example, the rolling mill which rolls out the plate made from aluminum -- setting -- (**) of drawing 2 -- injection supply of the coolant water (rolling oil which made water based) 5 is carried out by the nozzle 6 at the up-and-down rolling section and the up-and-down surface section of work rolls 3 and 4, and it is made to cool the lubrication of the rolling section, and a roll by the close side of the work rolls 3 and 4 of the upper and lower sides backed up by the up-and-down back up rolls 1 and 2, as shown in (**) 7 shows a plate and 8 shows housing.

[0003] However, the coolant water injected from the above-mentioned nozzle 6 is the vertical work roll 3 without a plate 7, and the roll-gap opening section GO between four. There is a problem which rebounds after turning to the appearance side of the shell vertical work rolls 3 and 4, adhering to the width-of-face edge of a plate 7 or hitting housing 8 further, and adheres on a plate 7.

[0004] Therefore, in the (b) of drawing 2, as a two-dot chain line shows, the suction duct 9 is arranged to the appearance side of the vertical work rolls 3 and 4, so that suction mouth 9a may approach at the width-of-face edge of a plate 7 as movement in the direction of the board width being possible, and it is the roll-gap opening section GO. The ridge equipment of a method it was made to make attract the passed coolant water 5 by the suction duct 9 is adopted.

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EFFECT OF THE INVENTION

[Effect of the Invention] As you stated above, according to the ridge equipment of the rolling mill of this invention, carry out the inclination array of two or more baffle plates. Make the roll-gap opening section correspond to the appearance side of a vertical work roll, arrange the becoming bridgewall, and it enables it to distribute the coolant water which has passed the roll-gap opening section to an inside-and-outside side bordering on a bridgewall. Since carry out turning of the coolant water which eliminated directly the coolant water led outside, and was led inside to a bridgewall side, it is made to meet the inclination of each baffle plate and it enabled it to make it discharge by the air injected from an air injection nozzle By rebounding upon the inside side of each baffle plate which the high ridge effect is acquired, and can prevent adhesion of the coolant water to a plate effectively, and constitutes the above-mentioned bridgewall, and sticking a prevention member A rebound of the coolant water from a baffle plate can be suppressed certainly, and the outstanding effect that the antisticking effect of the coolant water to a plate can be heightened further is demonstrated.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, with the above-mentioned ridge equipment, it is the roll-gap opening section GO about the suction force of the suction duct 9 that it is fairly strong and there is nothing. The coolant water 5 passed directly cannot be attracted and the actual condition cannot prevent adhesion of the coolant water 5 to the width-of-face edge of a plate 7 too.

[0006] If moisture has adhered to the front face of a plate 7 in the case of the rolling mill which rolls out the plate 7 made from the above-mentioned aluminum, since it will become causes, such as a white rust called water stainless steel, the high ridge equipment of the ridge effect is demanded.

[0007] Then, this invention tends to offer the ridge equipment of the rolling mill which eliminates effectively the coolant water passed from the roll-gap opening section to the appearance side, and can prevent adhesion in a plate.

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MEANS

[Means for Solving the Problem] In order that this invention may solve the above-mentioned technical problem, coolant water from a close side to a vertical work roll in the direction both-sides position of the board width by the side of the appearance of the above-mentioned vertical work roll in the rolling mill which has been made to carry out injection supply The bridgewall which turns two or more baffle plates to a downstream from the upstream of the direction of a pass line, make incline toward the method of the outside of slanting, and it comes to arrange It is made to confront each other possible [justification] in the direction of the board width so that it may correspond to the roll-gap opening section of a vertical work roll. And the air injection nozzle which sends out the air for carrying out turning of the coolant water which has advanced to the inside of this bridgewall to a bridgewall side is considered as the composition installed in the appearance side of the above-mentioned vertical work roll possible displacement].

[0009] Moreover, it is good to consider as the composition which stuck the rebound prevention member for absorbing the collision force of coolant water on the inside side of each baffle plate of a bridgewall.

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OPERATION

[Function] Existence of a bridgewall can distribute the coolant water which has passed the roll-gap opening section to the inside-and-outside side of a bridgewall, and the coolant water led outside will be eliminated as it is. On the other hand, the air from an air injection nozzle will carry out turning of the coolant water led inside to a bridgewall side, and it will be discharged along with the inclination of each baffle plate.

[0011] Moreover, if it rebounds upon the inside side of a baffle plate and the prevention member is stuck, even if coolant water collides, the rebound by the side of a plate will be prevented by absorbing the collision force.

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EXAMPLE

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0013] Similarly with the (b) (b) of drawing 1 showing one example of this invention, and having shown it to the (b) (b) of drawing 2 In the rolling mill with which injection supply has been made to be carried out in coolant water 5 by the nozzle 6 on the front face of the work rolls 3 and 4 of the upper and lower sides supported by the up-and-down back up rolls 1 and 2 from the close side of the vertical work rolls 3 and 4 Two or more baffle plates 10 suitably arranged in the shape of a louver at the interval so that it may incline towards the down-stream outside of the direction of pass-line L in the appearance side of the vertical work rolls 3 and 4, the connection which connects between the upper limits of each of this baffle plate 10, and between soffits -- the bridgewall 12 which consists of a member 11 While making it confront each other in the direction of the board width on both sides of a pass line L so that both the width-of-face edge of a plate 7 may be made to correspond and forming a fixed block 13 in the lower part of both these bridgewalls 12 Penetration screwing of the reverse flighted screw 14 which connected the end with the motor 15 among both these fixed blocks 13 is carried out. By approaching in the direction of the board width, making it made to desert both the bridgewalls 12 to it by rotating a reverse flighted screw 14 by the drive of the above-mentioned motor 15, and carrying out contiguity arrangement of both the bridgewalls 12 at **** of a plate 7 Roll-gap opening section GO A bridgewall 12 distributes the passed coolant water 5 to an inside-and-outside side, and it is made to be made to eliminate outside coolant water 5 directly.

[0014] Moreover, the air injection nozzle 17 for injecting air 16 in the coolant water 5 led to the vertical position by the side of the appearance of the above-mentioned vertical work rolls 3 and 4 in the inside of a bridgewall 12, and carrying out turning to it to a bridgewall 12 side By the air 16 which prepared possible [displacement] so that it might be made to correspond by the width-of-face size of a plate 7, and was injected from each of this air injection nozzle 17 Carry out turning of the coolant water 5 which has advanced inside the above-mentioned bridgewall 12 to a bridgewall 12 side, you make the inclination of a baffle plate 10 meet, and it is made to be made to discharge outside from between baffle plates 10.

[0015] Furthermore, in order to prevent the rebound by the collision to the bridgewall 12 of the coolant water 5 which carried out turning by the air 16 of the above-mentioned air injection nozzle 17, you stick a wire gauze 18 on the inside side of each baffle plate 10 of a bridgewall 12 as a rebound prevention member, and it is made to be made to absorb the collision force of coolant water 5 at a wire gauze 18.

[0016] It faces [operating a rolling mill and], and beforehand, a reverse flighted screw 14 is rotated by the drive of a motor 15, and a proximity setup of the position of a bridgewall 12 is carried out at the width-of-face end face of the plate 7 rolled out.

[0017] If injection supply of the coolant water 5 is carried out towards work rolls 3 and 4 in connection with operation of a rolling mill being performed in this state from a nozzle 6, since the bridgewall 12 is arranged on the appearance side of work rolls 3 and 4, Roll-gap opening section GO The passed coolant water 5 can be distributed an outside (anti-plate side) and inside (plate side) the above-mentioned bridgewall 12, will show the coolant water 5 led to the outside of a bridgewall 12 to arrow 5a, and will be eliminated as it is.

[0018] It is made to carry out turning of the coolant water 5 which sent out air 16 from the air injection nozzle 17 arranged to the appearance side of work rolls 3 and 4 since it adhered to the width-of-face edge of a plate 7 when the coolant water 5 led inside the above-mentioned bridgewall 12 on the other hand advanced as it is aslant towards the width-of-face edge of a plate 7, and has advanced inside the above-mentioned bridgewall 12 outside. Under the present circumstances, since inclination arrangement of each baffle plate 10 which constitutes the above-mentioned bridgewall 12 has been carried out outside towards the lower stream of a river of the direction of pass-line L, the above-mentioned coolant water 5 in which the air 16 of the air injection nozzle 17 carried out turning will be discharged outside from between baffle plates 10 along with the inclination of each baffle plate 10, as shown in arrow 5b.

[0019] Moreover, although there is a possibility that it may collide with a baffle plate 10 and the part may rebound to a plate 7 side when turning of the coolant water 5 which passes along the inside of the above-mentioned bridgewall 12 is carried out outside that air 16 spouts and it is made to meet by the baffle plate 10 Since it rebounds upon the medial surface of each baffle plate 10 and the wire gauze 18 is stuck as a prevention member in this invention It seems that it rebounds and does not adhere to up to a plate 7 since the collision force will be absorbed at a wire gauze 18 even if coolant water 5 collides with the medial surface of a baffle plate 10. In addition, the coolant water 5 absorbed at the wire gauze 18 will fall below. Moreover, even if the coolant water 5 led to the outside of a bridgewall 12 collides and rebounds upon housing or an axle box inside and it disperses in a plate 7 side, it does not adhere to a plate 7 over a bridgewall 12 by giving few laps (lap) between baffle plates 10.

[0020] Thus, it sets to this invention and is the roll-gap opening section GO. The passed coolant water 5 is distributed to an inside-and-outside side from a bridgewall 12. Since eliminate outside coolant water 5 directly with a bridgewall 12, inside coolant water 5 is made to meet the inclination of the baffle plate 10 of a bridgewall 12 by the air 16 from the air injection nozzle 17 and it was made to make it discharge As compared with the case where the conventional air suction duct is used, the throughput of the coolant water 5 near the width-of-face edge of a plate 7 can be decreased, and the ridge effect can be increased. Incidentally, the direction near the width-of-face end face of a plate 7 can lessen the amount of penetration of the coolant water 5 inside a bridgewall 12, and although positioning of the above-mentioned bridgewall 12 is advantageous, it is positioned at the interval which does not contact a plate 7 in consideration of the case where a plate 7 moves in a zigzag direction by a certain reason.

[0021] In addition, although the case where a wire gauze 18 was stuck on the inside side of the baffle plate 10 which constitutes a bridgewall 12 as a rebound prevention member of coolant water 5 was illustrated in the above-mentioned example, of course, change can be variously added within limits which do not deviate from the summary of that you may make it use not only the wire gauze 18 but the felt, sponge, etc., and other this inventions.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The outline of one example of the ridge equipment of the rolling mill of this invention is shown, a (b) is a cutting side elevation and a (b) is the central-plane-of-worm-gear view of a (b).

[Drawing 2] An example of a rolling mill is shown, a (b) is outline front view and a (b) is an outline side elevation.

[Description of Notations]

3 Upper Work Roll

4 Lower Work Roll

5 Coolant Water

10 Baffle Plate

12 Bridgewall

16 Air

17 Air Injection Nozzle

18 Wire Gauze (Rebound-Phenomenon Prevention Member)

L Pass line

GO Roll-gap opening section

[Translation done.]